

AUSTRALASIAN CERATOPOGONIDAE (DIPTERA, NEMATOCERA).

PART IV. THE STILOBEZZIA GROUP OF GENERA.

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(With Plate xxii and 23 Text-figures.)

[Read 29th October, 1947.]

INTRODUCTION.

Three genera of the *Stilobezzia* group have been recognized in the Australasian region, namely, *Stilobezzia* (eight species), *Monohalea* (eight species) and *Acanthohalea* (one species). All the recorded species, of which five out of a total of seventeen are described as new below, come from either New Zealand, Tasmania or New South Wales, with the exception of one species from southern Western Australia. More species will undoubtedly be added to this list and the absence of any records of the group from New Guinea should not be taken as indicative of its absence there since *Stilobezzia* occurs in the Oriental region and on certain islands of the central Pacific and will almost certainly be found in the tropics of the Australasian region when more intensive collecting is undertaken.

For characterization of the group and differentiation of the genera see discussion and key in Part I of this series.

Genus STILOBEZZIA Kieffer.

KIEFFER, J. J., 1911.—*Rec. Indian Mus.*, 6: 118.

Synonymy: *Hartomyia* Malloch, J. R., 1915. *Bull. Ill. Sta. Lab. Nat. Hist.*, 10: 339.

Genotype (by original designation): *S. notata* (de Meij.) = *S. festiva* K.

GENERIC CHARACTERS.

Usually of moderate to large size, members of the genus *Stilobezzia* are rather slender insects with few body hairs; the legs are slender and there are no spines on the femora. The female antennae have segments 3–10 oval and 11–15 long and cylindrical, but in the male only the last three or four segments are elongated and there are well developed plumes on the basal segments. Humeral pits are present but may be inconspicuous and the scutum is usually bare of long bristles. The fourth tarsal segment is cordiform, the fifth is not enlarged and the female claws are large and very unequal; an empodium is absent. The wings are rather long with distinct microtrichia over all the surface and usually some macrotrichia at the wing tip. The costa extends to at least two-thirds of the wing length, the two radial cells are very distinct but the second is considerably longer than the first. There is a distinct intercalary fork and the median fork is very obviously petiolate.

Key to Australasian Species of *Stilobezzia*.

1. Anterior four legs of female with a pair of black spinules at the base of each fifth tarsal segment; all tibiae mottled with numerous dark brown spots, fore femora with two brown bands, mid and hind femora with one brown band *pictipes* K.
No such black spinules on fifth tarsal segments; ornamentation of legs otherwise 2
2. First hind tarsal segment with a basal spine 3
First hind tarsal segment without a basal spine 4
3. Very dark brown species; scutellum very dark brown. Second radial cell 1.1-1.5 × first *antipodalis* I. & M.
Lighter brown to golden; scutellum yellow. Second radial cell 3 × length of first *tasmaniensis*, n. sp.

4. Yellowish-brown species *ohakunei* I. & M.
Darker reddish-brown to greyish-brown species 5
5. Wing length 3.0 mm.; second radial cell $4 \times$ length of first *fitzroyensis*, n. sp.
Wing length less than 2.5 mm.; second radial cell $3 \times$ length of first 6
6. Genitalia of male not exceptionally large, harpes almost as long as coxite, tapering to a point which is recurved over the phallosome 7
Genitalia of male extraordinarily large (coxite longer than the hind femur or tibia), harpes not half the length of the coxite, not recurved or pointed at the tip *genitalis*, n. sp.
7. Wing of male with fairly numerous macrotrichia between M_1 and M_2 , and M_2 and M_{3+4} *badia* Macfie
Wing of male with few macrotrichia between M_1 and M_2 , and only one or two between M_2 and M_{3+4} *tonnoiri* Macfie

STILOBEZZIA ANTIPODALIS Ingram & Macfie.

INGRAM, A., and MACFIE, J. W. S., 1931.—*Ann. Trop. Med. and Parasit.*, 25: 203.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 41 (in key).

Type: ♂ type in British Museum (Natural History).

Type Locality: White Rock, New Zealand.

STILOBEZZIA OHAKUNEI Ingram & Macfie.

INGRAM, A., and MACFIE, J. W. S., 1931.—*Ann. Trop. Med. and Parasit.*, 25: 202.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 41.

Type: ♀ type in British Museum (Natural History).

Type Locality: Ohakune, New Zealand. This species was later recorded from Lake Brunner and Nihotapu (Macfie, 1932).

STILOBEZZIA BADIA Macfie.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 41.

Type: One male and one female specimen comprise the type series but which is the holotype is not disclosed although it is admitted that "the association of this male with this female is purely conjectural, and may be erroneous". In British Museum.

Type Locality: The female specimen came from Aniseed Valley and the male from Nelson, New Zealand.

STILOBEZZIA TONNOIRI Macfie.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 43.

Type: ♂ type in British Museum (Natural History).

Type Locality: The first listed locality is Reefton, but the species is also recorded from Nelson and Aniseed Valley, New Zealand.

STILOBEZZIA PICTIPES Kieffer.

KIEFFER, J. J., 1917.—*Ann. Nat. Mus. Hung.*, 15: 191.

Type: Presumably in National Museum of Hungary, Budapest. Allotype ♂ in the C.S.I.R. Museum (Allotype designated below).

Type Locality: Parramatta, New South Wales.

Translation of Original Description.

"♀. Whitish. Front and mouthparts dull reddish-brown. Eyes glabrous, confluent or separated at most by a fine line. Palpi brownish-black. Antennal segments 4-10 black with white base, gradually lengthening, 4 almost globular, 10 distinctly longer than wide and almost cylindrical, segments 11-15 brownish-black, together scarcely as long as 3-10 together, each twice as long as 10, cylindrical. Mesonotum dark brown, convex, dull, subglabrous, the shoulders a little more clear. Halteres white. Wings hyaline, lobe almost rectangular, R_{4+5} attaining the distal third, not passed by the costa, at least one-half longer than R_1 , parallel to the anterior border, at its termination it curves suddenly towards the border; first radial cell rectangular, twice as long as wide, base of R_{4+5} almost perpendicular like r-m, stem of the media going beyond half R_{4+5} , the base of Cu_1 on M_{3+4} proximal to r-m, Cu_1 only attaining half M_{3+4} , the former arched. Legs whitish, coxae dull, femora inermous, not enlarged, the anterior and posterior pairs with two brown rings, the intermediate with one brown ring before the distal extremity, all the tibiae are decorated dorsally with numerous black spots and darts, their distal ends, like the articulations of the tarsi, are black; posterior tarsus scarcely as long as the tibia, fourth segment transverse, black, prolonged ventrally in two lobes directed forwardly, fifth not as long as the third and fourth together, narrow, curved having at their bases a pair of cylindrical spinules, except in the posterior tarsus; claws unequal, the larger equalling two-thirds of the segment, the other very small. Abdomen convex as large as the thorax, dull and almost glabrous; tergites crossed by a longitudinal dull band, which includes at the anterior border a white spot; sides of the tergites with a black spot; sternites brown at the posterior border. Length 2 mm."

DISTINCTIVE CHARACTERS. (See Table 1 for measurements.)

The ornamentation of this species is very characteristic. The fore femora have dark brown bands at about one-third and two-thirds from the base and the mid and hind femora a single preapical dark band (this is at variance with the original description of the hind femora). All tibiae are extensively mottled with dark brown irregular spots and their apices are dark. The abdomen is ornamented, the tergites being dark brown but enclosing an anterior medial pale area on each segment (see Text-fig. 12). There are three very unequal spermathecae (Text-fig. 13), the largest 120μ by 75μ , the next 45μ by 40μ and the smallest 10μ by 10μ .

The original description does not mention the apical spine on the first tarsal segment of the fore leg nor the single basal and two apical spines on the first tarsus of the mid leg and two apical spines on the second tarsal segment. These spines are found in both sexes. The wing is illustrated in Plate xxii, fig. 1.

DESCRIPTION.

Allotype Male.

The male is very similar in colouration to the female. The antennae have segments 3-12 with long dense plumes, segments 4-11 are short, 12 is about twice the length of 11 and 13-15 are about twice the length of 12. The claws are equal, shorter than the fifth tarsal segment; each has a small basal angle and under high magnifications each claw may be seen to be divided at the tip.

Genitalia (see Text-fig. 14): The coxites are complicated by a broad, hook-like basal lobe. The phallosome comprises two converging narrow chitinous rods and the harpes are separate stout rods with recurved tips.

Distribution: I have examined a considerable series of both sexes of this species from Northwood, New South Wales (2.xi.1932, A. R. Woodhill), and from these the allotype was selected. Additional material has been lodged in both the C.S.I.R. and Macleay Museums.

STILOBEZZIA TASMANIENSIS, n. sp.

Types: Holotype ♀ and allotype ♂, together with two ♀♀ paratypes in the C.S.I.R. Museum.

Type Locality: Burnie, Tasmania (31.i.1923, A. Tonnoir). All type specimens with same collection data.

DISTINCTIVE CHARACTERS.

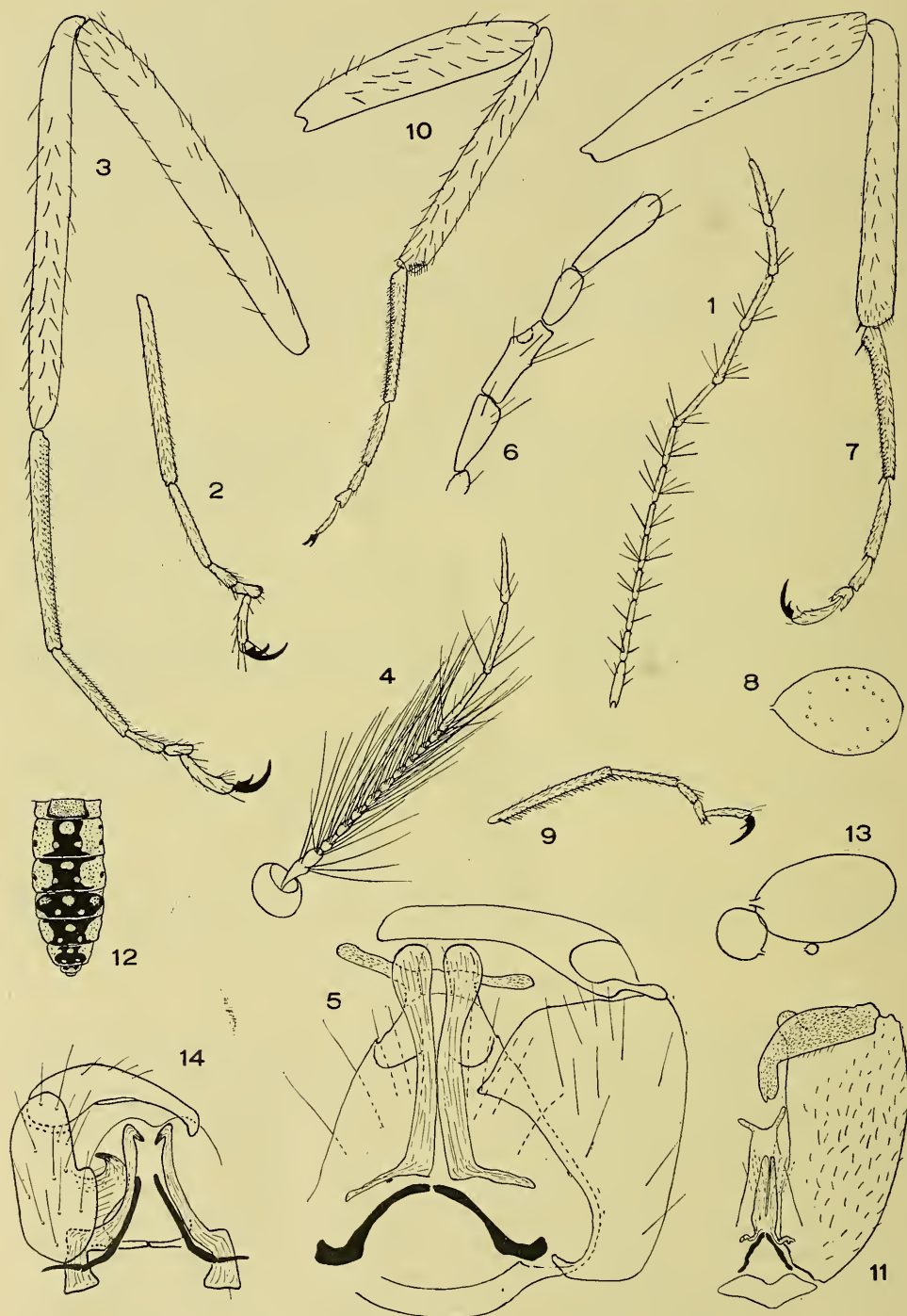
This species is only likely to be confused with *S. antipodalis* which is, however, a much darker species with a very dark brown scutellum as compared with a yellow scutellum in *S. tasmaniensis*. Further, the male genitalia of the two species are quite distinct.

DESCRIPTION. (For measurements see Table 1.)

Female.

Head: The head is brown, shining, with dark bristles on the vertex and overhanging the eyes and including one longer one projecting between the eyes, which are separated by a very narrow space. The antennae are darker brown with the first eight flagellar segments cylindrical and the last five much elongated and all segments have brown hairs. The palpi are short with the segments not obviously modified (Text-fig. 6), although there is a sensory pit towards the distal end of the third segment.

Thorax: The scutum is dark brown, shining with an extensive square golden to golden-brown area at each anterior corner and a light brown prescutellar area. There is a longitudinal row of black hairs along the mid-line and two similar lateral lines on each side, the latter being marked by lighter brown lines on the integument. There are also two pairs of dark, fine spines on the anterior border of the scutum half-way between the middle and the lateral margin and a group of stronger bristles above the wing roots. Humeral pits are present but inconspicuous. The scutellum is yellow with one long dark brown border bristle at the centre and three lateral ones on each side, together with sparse fine hairs. The postnotum is dark brown, the halteres brown at the base with the rest pale yellowish and the pleura have the same range of colour as the scutum.

Text-figures 1-14. Various species of *Stilobezzia*.

Figs. 1-3.—*S. fitzroyensis* (holotype). 1. Antenna (segments 3-15), $\times 50$. 2. Fore tarsus, $\times 50$. 3. Hind leg, $\times 50$.

Figs. 4-9.—*S. tasmaniensis*, 4 and 5 of allotype male, 6 to 9 of a female paratype. 4. Antenna, $\times 50$. 5. Genitalia, $\times 160$. 6. Palpus, $\times 160$. 7. Hind leg, $\times 50$. 8. Intermediate spermatheca, $\times 160$. 9. Fore tarsus, $\times 50$.

Legs: The legs are yellowish to golden-brown with the tips of the femora and the third to fifth tarsal segments darker, but there are no pronounced markings. The fourth tarsal segments are bilobed beneath and all the claws are almost as long as the fifth tarsus, single, curved and with a small tooth at the base.

There is a small strong spine at the anterior end of each first tarsal segment and a similar, but less conspicuous spine at the posterior extremities of both the first and second tarsal segments. Both the fore tarsus and the hind leg are figured (Text-figs. 9 and 7).

Wings: There are distinct microtrichia all over the wings (see Plate xxii, fig. 4), but macrotrichia are present at the tip only. The radial cells are well formed, the second three times as long as the first and the costa extends over two-thirds of the wing length.

Abdomen: This is brown with a yellowish tip and there is a group of black bristles at the sides of the first abdominal segment. The spermathecae are three in number, all unequal, and the smallest is minute. All have a short chitinized duct and all are sparsely pitted. The smaller of the two large spermathecae is shown in Text-fig. 8. The dimensions of the spermathecae are 120μ by 85μ , 100μ by 70μ and 30μ by 20μ .

Male.

This sex is similar to the female in colouration and bristling. All the antennal segments (Text-fig. 4) are dark brown and there are long plumes on segments 3-12, but only 13-15 are elongate. All the tarsal claws are equal and simple and the wings have only a very few macrotrichia at the tip.

The genitalia (Text-fig. 5) are well developed with broad coxites and unmodified styles. The ninth tergite is as long as the coxites, and terminates distally in two divergent finger-like processes and the harpes are almost as long as the coxites, lying close together, of uniform width for most of their length but a little swollen distally. The phallosome consists of two curved rods almost uniting distally.

Distribution: Apart from the type series I have seen one other male from Cradle Valley, Tasmania (A. Tonnoir, 26.i.1923).

STILOBEZZIA GENITALIS, n. sp.

Type: Holotype ♂ in the C.S.I.R. Museum.

Type Locality: Strahan, Tasmania (6.ii.1923, A. Tonnoir).

DISTINCTIVE CHARACTERS.

This species is very similar in general colouration to *S. tasmaniensis* but the first tarsal segment lacks a basal spine (which would no doubt serve to distinguish females) and the genitalia are relatively enormous, each coxite measuring 0.85 by 0.34 mm.

DESCRIPTION. (For measurements see Table 1.)

Male.

The measurements of the antennae, legs and wings closely parallel those of *S. tasmaniensis*. The scutum has a square golden area at the anterior corners only and the pleura are almost as light as these areas. The scutellum has one central border bristle with four laterals on each side. The first tarsal segments lack a strong basal spine. (See Text-fig. 10 for illustration of hind leg.) The wing is illustrated in Plate xxii, fig. 2.

The genitalia (Text-fig. 11) have greatly enlarged coxites each of which has a thumb-like process on the inner side and the styles are very heavily chitinized and finely hairy with the tip strongly bent. The ninth tergite is only about half the length of the coxite

Figs. 10-11.—*S. genitalis*. 10. Hind leg of holotype, $\times 50$. Genitalia of specimen from Cradle Valley, $\times 50$.

Figs. 12-14.—*S. pictipes* (specimens from Northwood). 12. Dorsum of female abdomen, $\times 20$. 13. Spermathecae, $\times 160$. 14. Male genitalia, $\times 160$.

and terminates in two divergent finger-like processes. The harpes are elongate simple structures lying side by side and the phallosome consists of two separate short rods almost meeting apically but widely divergent at the base.

The female is not yet known.

Distribution: I have examined a further male of this species from Cradle Valley, Tasmania (A. Tonnoir, 19.i.1923).

STILOBEZZIA FITZROYENSIS, n. sp.

Type: Holotype ♀ in the C.S.I.R. Museum.

Type Locality: Fitzroy Falls, New South Wales (22-27.xi.1937, A. Tonnoir).

DISTINCTIVE CHARACTERS.

A large, rather dark brown species with largely pale legs in which the first tarsal segments lack a basal spine. The second radial cell is four times the length of the first and the distal part of R_1 is in line with r-m.

DESCRIPTION. (For measurements see Table 1.)

Female.

Head: The head is chestnut brown with a row of black orbital bristles above the eyes but otherwise it is bare dorsally. The eyes are separated by only a fine line. The antennal segments are cylindrical with the last five elongate (Text-fig. 1).

Thorax: The thorax is rather darker brown than the head, with a dull brownish bloom. The pleura are similarly dark brown but the scutellum is distinctly paler (reddish-brown) and invested with some nine dark bristles. Humeral pits are obvious and the scutum is largely bare with a few bristles just above the wing roots and just anterior to the scutellum. The halteres are yellowish.

Legs: The legs are generally pale yellowish with the fourth and fifth tarsi darker and the apices of the first tarsal segments are also narrowly dark and the femora reddish-brown. The fourth tarsal segment is bilobed beneath (in Text-figs. 2 and 3 it is shown in lateral view, hence it does not appear bilobed in these illustrations).

Wings: The wings (Plate xxii, fig. 3) are entirely clothed with microtrichia and macrotrichia are numerous on the distal portion of the wing from the level of the end of the costa to the tip and the intercalary fork is distinct.

The second radial cell is four times the length of the first and r-m and the distal part of R_1 are in line.

Abdomen: The abdomen is greyish-brown, sparsely clothed with short hairs and there are two large and one minute spermathecae, all of which are sparsely pitted. The two large spermathecae measure 95μ by 70μ and 85μ by 65μ .

Distribution: Only known from the type locality.

Genus MONOHELEA Kieffer.

KIEFFER, J. J., 1917.—*Ann. Mus. Nat. Hung.*, 15: 294 and 312.

Synonymy: *Schizohalea** Kieffer, J. J., 1917. *Ann. Mus. Nat. Hung.*, 15: 295. *Allohelea* Kieffer, J. J., 1917. *Ann. Mus. Nat. Hung.*, 15: 364.

Genotype: *M. hieroglyphica* Kieffer 1917, loc. cit. (by original designation).

GENERIC CHARACTERS.

This genus resembles *Stilobezzia* in most respects but differs particularly in the characters of the fourth tarsal segment and the female claws.

The body is not very hairy and rather shorter than in *Stilobezzia*. The fore and mid legs are unmodified, the fourth tarsal segment is short but cylindrical and the tarsal claws are relatively small and equal in both sexes. In the hind legs both the femora and the tibiae may be normal or somewhat enlarged but the femora are without spines although strong hairs may be present; tarsus I has a strong spine at the tip and there is one very long claw (equalling the fifth tarsal segment in length) with a basal spine. In the male all the claws are equal and simple and no empodium is present in either sex. In both sexes the combined length of the femora and tibiae appears disproportionately

* Edwards (1926) suggests that the name *Schizohalea* has priority over *Monohalea*. Reference to the pagination cited above clearly indicates that this suggestion is erroneous.

long in relation to the tarsal length and the first hind tarsal segment may be slightly curved at the base. At most there are a few macrotrichia at the wing tip and the microtrichia are very fine and can only be discerned at high magnifications. The costa extends well beyond the middle of the wing and of the two radial cells the second is often distinctly longer than the first. The median fork is petiolate and M_2 continuous without any basal interruption.

In the two species of which I have examined males there are certain common features in the genitalia. The ninth tergite is broad, even apically, with the distal margin broadly indented and there are two small hairy lobes on the inner surface. The phallosome is complicated by an accessory chitinated structure lying between it and the harpes. Whether these characters are typical of the genus as a whole remains to be determined although the phallosome of *M. antipodalis*, as figured by Ingram and Macfie (1931), appears to be simple.

TABLE 1.
Various Measurements of Species of Stilobezzia and Monohelea.

	<i>Stilobezzia fitzroyensis</i> ♀	<i>Stilobezzia tasmaniensis</i> ♀	<i>Stilobezzia tasmaniensis</i> ♂	<i>Stilobezzia genitalis</i> ♂	<i>Stilobezzia pictipes</i> ♀	<i>Monohelea tasmaniensis</i> ♀	<i>Monohelea tasmaniensis</i> ♂	<i>Monohelea brevipes</i> ♂	<i>Monohelea tigrinus</i> ♀
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Wing—									
Length ..	3.0	2.295		2.278	1.921	1.94		2.47	0.935
Width ..	1.0	0.748		0.697	0.714	0.68		0.60	0.289
Antenna—									
Total length segments 3–15	1.73	1.275	1.190	1.245	1.190				
Segment 3 ..	0.145	0.095	0.160	0.150	0.100	0.055			0.030
„ 4 ..	0.095	0.055	0.060	0.055	0.060	0.040			0.020
„ 5 ..	0.095	0.055	0.060	0.055	0.065	0.040			0.023
„ 6 ..	0.090	0.055	0.055	0.055	0.065	0.040			0.025
„ 7 ..	0.100	0.055	0.050	0.050	0.065	0.045			0.025
„ 8 ..	0.100	0.060	0.045	0.050	0.065	0.045			0.025
„ 9 ..	0.115	0.060	0.045	0.045	0.065	0.045			0.030
„ 10 ..	0.115	0.070	0.040	0.045	0.075	0.055			0.030
„ 11 ..	0.175	0.080	0.045	0.050	0.140	0.085			0.035
„ 12 ..	0.175	0.165	0.050	0.050	0.155	0.080			0.040
„ 13 ..	0.165	0.160	0.200	0.250	0.155	0.090			0.040
„ 14 ..	0.150	0.150	0.200	0.200	0.155	0.090			0.040
„ 15 ..	0.210	0.160	0.190	0.190	0.165	0.100			0.055
Palpus—									
Segment 2 ..		0.065			0.075	0.045			0.030
„ 3 ..		0.075			0.075	0.085			0.030
„ 4 ..		0.050			0.055	0.050			0.023
„ 5 ..		0.100			0.060	0.065			0.045
Fore leg—									
Femur ..	0.884	0.680			0.629	0.510		0.714	
Tibia ..	0.901	0.680			0.561	0.510		0.680	
Tarsus I ..	0.527	0.374			0.374	0.204		0.272	
„ II ..	0.255	0.187			0.170	0.119		0.187	
„ III ..	0.085	0.085			0.059	0.085		0.136	
„ IV ..	0.068	0.068			0.051	0.060		0.085	
„ V ..	0.170	0.136			0.102	0.119		0.136	
Claw ..	0.119	0.102			0.102	0.051		0.041	
Hind leg—									
Femur ..	1.020	0.884	0.901	0.731	0.646	0.850	0.731	1.156	0.430
Tibia ..	1.071	0.867	0.867	0.782	0.765	0.850	0.731	1.224	0.410
Tarsus I ..	0.595	0.442	0.442	0.374	0.425	0.289	0.289	0.340	0.175
„ II ..	0.306	0.221	0.238	0.187	0.170	0.204	0.187	0.187	0.085
„ III ..	0.102	0.102	0.102	0.085	0.051	0.119	0.119	0.136	
„ IV ..	0.076	0.068	0.051	0.051	0.034	0.102	0.085	0.102	
„ V ..	0.170	0.136	0.102	0.119	0.068	0.136	0.136	0.187	
Claw ..	0.119	0.101	0.043	0.043	0.068	0.187	0.043	0.068	

Key to Australasian Species of Monohelea.

1. Wings ornamented with dark spotting *nubeculosa* Macfie
Wings not ornamented 2
2. Wing length only about 1.0 mm., small species *tigrinus* (Sk.)
Wing length about 2.0 mm. or more, larger species 3
3. First hind tarsal segment with strong spine at base only *tonnoiri* Macfie
First hind tarsal segment with strong spines at both base and apex but none at centre .. 4
First hind tarsal segment with strong spines at base, middle and apex 6
4. Legs uniformly brown *tasmaniensis*, n. sp.
Legs with dark bands apically on hind tibiae 5
5. Less robust species, with dark band on hind femur occupying distal third .. *ferruginea* Macfie
Very robust species, with dark band on hind femur only occupying distal fifth; very strong series of nine spines at apex of hind tibia *brevipes*, n. sp.
6. Dark band on hind femur extending to apex *clavipes* Macfie
Dark band on hind femur not reaching apex *antipodalis* I. & M.

MONOHELEA NUBECULOSA Macfie.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 45.

Type: ♀ type in British Museum (Natural History).

Type Locality: Lake Brunner, New Zealand.

MONOHELEA TONNOIRI Macfie.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 46.

Type: ♀ type in British Museum (Natural History).

Type Locality: Nelson, New Zealand.

MONOHELEA CLAVIPES Macfie.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 48.

Type: ♀ type in British Museum (Natural History).

Type Locality: Dun Mt., New Zealand.

MONOHELEA FERRUGINEA Macfie.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 49.

Type: ♀ type in British Museum (Natural History).

Type Locality: Waiho, New Zealand.

MONOHELEA ANTIPODALIS Ingram and Macfie.

INGRAM, A., and MACFIE, J. W. S., 1931.—*Ann. Trop. Med. and Parasit.*, 25: 205.

MACFIE, J. W. S., 1932.—*Ann. Trop. Med. and Parasit.*, 26: 44 (in key).

Types: Type ♂♂ in British Museum (Natural History).

Type Locality: Ohakune, New Zealand.

MONOHELEA TIGRINUS (Skuse).

SKUSE, F. A., 1889.—*Proc. Linn. Soc. N.S.W.*, 4 (2nd series): 306 (*Ceratopogon*).

KIEFFER, J. J., 1917.—*Ann. Mus. Nat. Hung.*, 15: 191 (*Stilobezzia*).

Type: Holotype ♀ in Macleay Museum, University of Sydney.

Type Locality: Berowra, New South Wales.

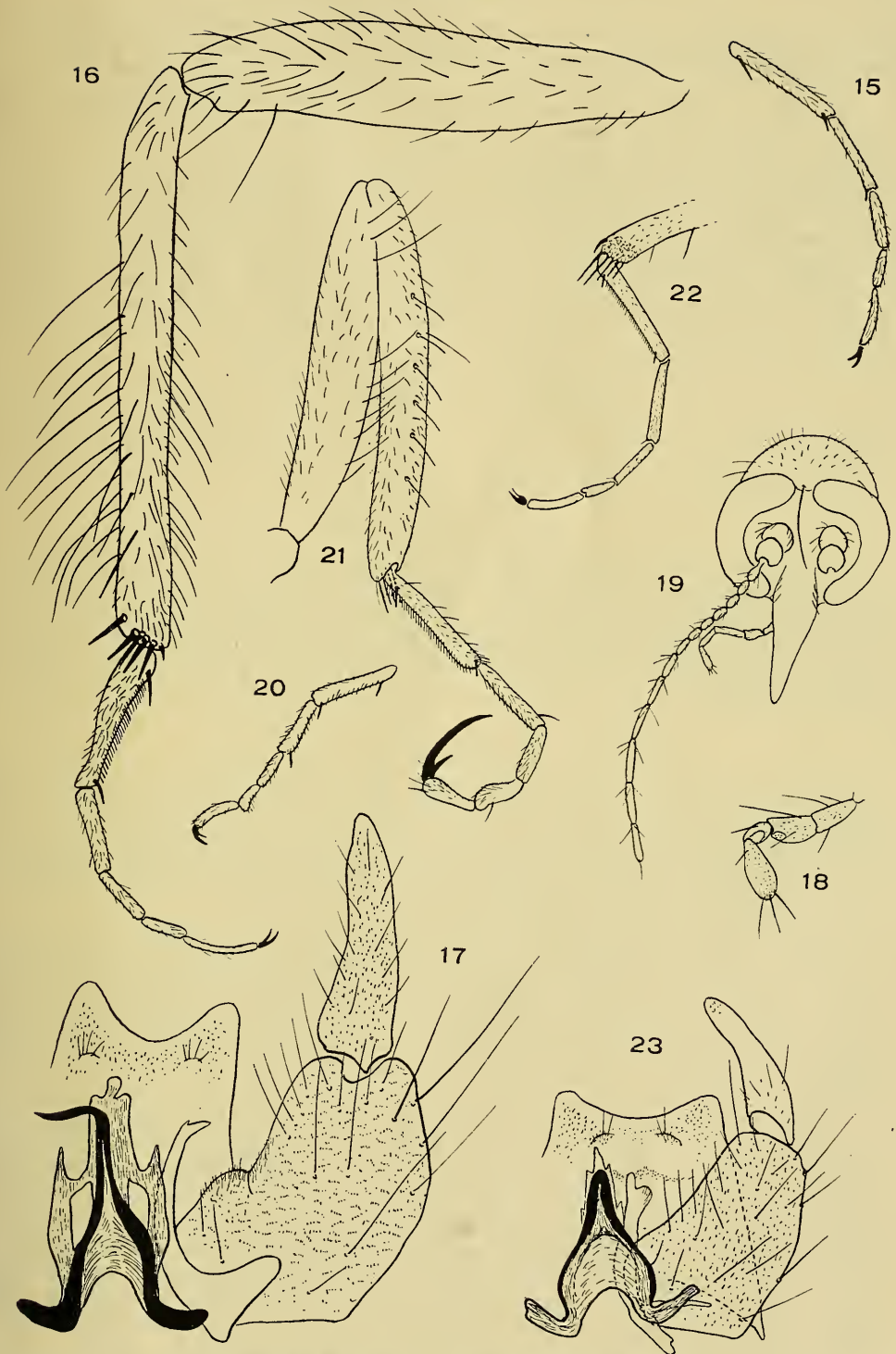
Synonymy: *Ceratopogon tigrinus*, Skuse 1889, loc. cit. *Ceratolophus tigrinus*, Kieffer, J. J., 1906. Chironomidae in Wytsman's *Genera Insectorum*, fasc. 42: 61. *Stilobezzia tigrinus*, Kieffer 1917, loc. cit.

Note: Skuse's type (mounted in gum on a card) was not satisfactory for critical examination so the specimen was soaked off in water and remounted in euparal. Sufficient can now be seen to place this species, at least tentatively, in the genus *Monohelea* and there should be little difficulty in recognizing this species when it is taken again in the field even though complete redescription is not possible.

DISTINCTIVE CHARACTERS.

The small size of this species is alone sufficient to differentiate it from any of the other known species of *Monohelea* in the region. The various measurements are given in Table 1.

The relevant part of the original description, concerning characters which can no longer be distinguished in the type, are as follows: "Antennae, clypeus and palpi black. Thorax brown, dull, with two longitudinal stripes and three irregular lateral spots of ochreous; sparingly covered with short brown hairs; pleurae, pectus, and metanotum dark brown; scutellum light brown. Halteres brown. Abdomen short, robust, dusky

Text-figures 15-23. Various species of *Monohalea*.

Figs. 15-17. *M. brevipes* (holotype male). 15. Fore tarsus, $\times 66$. 16. Hind leg, $\times 66$. 17. Genitalia, $\times 134$. 18. *M. tigrinus* (holotype female), palpus, $\times 200$.
 Figs. 19-23. *M. tasmaniensis*. 19 to 21. Holotype female. 22 and 23. Allotype male. 19. Anterior view of head, $\times 66$. 20. Fore tarsus, $\times 66$. 21. Hind leg, $\times 66$. 22. Hind tarsus, $\times 66$. 23. Genitalia, $\times 134$.

brown, clothed with brown hairs. Legs brown, tips of femora and tarsi yellowish; posterior tibiae incrassated. In fore legs tibia somewhat more than twice length of metatarsus. . . ."

In addition to these characters the following can be seen in the mounted type. The antennal segments are subcylindrical with the apical five only a little longer than the preceding ones and there appears to be a long spine arising from the frons. The segments of the palpi are as illustrated in Text-fig. 18. The hind tibia is over twice the length of tarsus I and the tarsal ratio is 2.0. In addition the hind first tarsus bears a basal spine and the segment is rather bent at the base. There are spines at the apex of the hind tibia and the claws are all rather long, equal on the anterior four legs but single on the posterior legs (whether or not there is a basal spine cannot be discerned). On the wings the first radial cell is two-thirds the length of the second radial cell (see Plate xxii, fig. 7).

Distribution: This species is still only known from the type locality.

MONOHELEA TASMANIENSIS, n. sp.

Types: Holotype ♀, allotype ♂ together with one ♀ and one ♂ paratypes in the C.S.I.R. Museum.

Type Locality: Cradle Valley, Tasmania (A. Tonnoir, 16.1.1923). All type specimens with same collection data.

DISTINCTIVE CHARACTERS.

This species must be extremely close to *M. tonnoiri*. Apart from the slight differences in the measurements of antennal segments, the only obvious character which may serve to distinguish the two is the presence of a spine at the distal end of tarsus I in *M. tasmaniensis* instead of only a basal one as in *M. tonnoiri*. The discovery of the male of the latter species would probably make it possible to establish the relationship of the two species.

DESCRIPTION. (See Table 1 for measurements.)

Female.

Head: The head is greyish dorsally with dark brown bristles; the eyes are just separated with a long, strong, fine spine arising on the frons and projecting down between the bases of the antennae (see Text-fig. 19). The latter are dark brown, the first eight flagellar segments are short and oval, the last five elongated and cylindrical. The segments of the palpi are cylindrical, the third being about twice as long as the second and a little longer than the fourth and fifth.

Thorax: The scutum is dark brown with a greyish pubescence, lighter brown at the anterior corners with a sparse covering of long brown hairs which are longest at the lateral margins and in front of the scutellum. The humeral pits are well developed. The scutellum is brown at the centre and light brown laterally with about four long border bristles on each side and a scattering of short hairs. The postnotum is dark with greyish pubescence, the halteres are yellowish-white and the pleura similar to the scutum.

Legs: The legs have the mid and hind coxae similar in colour to the pleura but the fore coxae are yellowish-brown; the rest of the legs are yellowish-brown. The hind femora are somewhat swollen, with some long hairs but no spines and the hind tibiae are similarly clothed but with a row of about six spine-like hairs, and there is also a comb of five strong spines (two of which are longer than the other three) at the apex. There is a stout spine at both the base and the apex of the first tarsal segment of all the legs, the fourth tarsal segment is subcylindrical, the fifth is unarmed and the claws of the anterior four legs are equal and small, but those of the hind legs are very long, single and with a basal tooth (see Text-figs. 20 and 21 for illustration of fore tarsus and hind leg).

Wings: The wings (Plate xxii, fig. 5) have very fine microtrichia, only visible at high magnifications and a few macrotrichia on the apical portion only. The costa extends to about two-thirds of the wing length, the radial cells are distinct, the first

small, the second larger and blunt-ended. The intercalary fork is indistinct, the media is petiolate and the alula bare. There is a row of prominent short spines along the basal portion of the radius.

Abdomen: The abdomen is dark brown and clothed with brown hairs.

Male.

This sex is similar in most respects to the female but the antennae have dense dark brown verticils on segments 3-11 and there is a ring of about six long strong hairs at the bases of segments 12 to 14 and 15 ends in a short, strong hair but no stylet is apparent. The eyes are a little more widely separated but the same long frontal spine is present. The legs are slightly darker, the fore coxae are not so distinctly paler than the mid and hind coxae which are themselves a little lighter than the pleura. All the tarsal claws are equal and simple (Text-fig. 22).

Genitalia: The genitalia are illustrated in Text-fig. 23. It seems likely that the phallosome, and in particular the accessory portion lying between it and the harpes, will provide useful diagnostic characters.

Distribution: Apart from the type locality I have seen a specimen of this species from Strahan, Tasmania (6.ii.1923, A. Tonnoir).

MONOHELEA BREVIPES, n. sp.

Type: Holotype ♂ in the C.S.I.R. Museum.

Type Locality: Katanning, Western Australia (K. R. Norris, 8.viii.1937).

DISTINCTIVE CHARACTERS.

A large, robust species with uniformly dark body and strong hairy brown legs in which the hind femur is moderately swollen, the hind tibia is strong and four times as long as the first tarsal segment and terminating in nine strong black spines. The hind tarsi appear reduced in size in relation to the femora and tibiae and the legs are uniformly dark brown except for the basal four-fifths of the hind tibiae, which are lighter brown.

DESCRIPTION. (See Table 1 for measurements.)

Male.

Head: The head is very dark brown, covered with a grey bloom and sparse black hairs and a single long, strong hair projecting from the frons between the pedicels. The antennae are dark brown with almost black dense plumes on segments 3 to 11. The palpi are slender, the segments cylindrical and segments 3 to 5 are subequal.

Thorax: This is dark brown with a greyish bloom on scutum and pleura. The scutellum is lighter brown on its underside and the halteres are brown-stemmed with light yellow-brown knobs. Prominent humeral pits are present.

Legs: The coxae are shining brown, the rest of the legs are generally hairy with very long hairs on the femora and tibiae. Tarsus I of the forelegs (see Text-fig. 15) has a single stout spine at both base and apex and a similar spine at the apex of the second segment. Segment 4 is cylindrical and 5 is slightly curved. The femora of the hind legs are stout and the tibiae elongate and terminating with a comb of nine stout black spines, of which there are five on one side and four on the other. Both the femora and tibiae are hairy and some of the hairs are exceptionally long. The former are dark brown, as is also the apical fifth of the tibiae, the rest being lighter brown. The first tarsal segment is very slightly curved, narrowest just before the apex and with stout basal and apical spines. It is only one-fourth the length of the tibia and a little less than twice that of the second tarsal segment. The fourth is cylindrical and the fifth longer and curved. (The hind legs are illustrated in Text-fig. 16.) The claws of all legs are equal, simple and small.

Wings: In the wings (see Plate xxii, fig. 6) the second radial cell is about twice the length of the first, r-m is oblique and a little shorter than the petiole of the media. The base of Cu₁ arises just slightly anterior to the median fork. There are a very few macrotrichia along the anterior margin beyond the termination of C and microtrichia are only visible at high magnifications.

Abdomen: This is similar in colour to the thorax, clothed with sparse but prominent hairs and in length it is about twice that of the thorax.

Genitalia (Text-fig. 17): The phallosome is strongly recurved at the tip and there is a complex accessory structure between it and the harpes and the latter are strongly chitinized with an unequally bidentate apex.

Distribution: Only known from the type locality.

Genus ACANTHOHELEA Kieffer.

KIEFFER, J. J., 1917.—*Ann. Nat. Mus. Hung.*, 15: 198.

Genotype (by monotypy): *A. pruinosa* Kieffer, loc. cit.

GENERIC CHARACTERS.

This genus belongs to the *Stilobezzia* group of genera and may be recognized by the presence of microtrichia on the wings, the petiolate median stem, both radial cells open, bilobed fourth tarsus on all legs and all femora and tibiae spinose.

ACANTHOHELEA PRUINOSA Kieffer.

KIEFFER, J. J., 1917.—*Ann. Nat. Mus. Hung.*, 15: 198.

Type: Type ♂ presumably in National Museum of Hungary, Budapest.

Type Locality: Sydney, New South Wales.

Translation of Original Description.

"♂. Reddish yellow, dull and pruinose. Head seen from before circular. Mouthparts brownish-black, slender and long, longer than the height of the head. Eyes glabrous, confluent at the vertex. Palpi black, very long, 5-segmented, of which the third is a little longer than the fifth, not enlarged, fourth distinctly shorter than the fifth, the latter without long hairs. Antennae 15-segmented, plume golden yellow, reaching segment 14, scape reddish-brown, segments 3-12 yellow, 13-15 brownish black, segments 4-12 cylindrical, distinctly longer than wide, the three last segments are elongated, filiform, each three times as long as 12, 13 and 14 have a long verticil at their base. Thorax higher than long, convex, without spinule in front, glabrous, save several hairs on the scutellum and on the sides of the mesonotum. Halteres brown, extremity of the club whitish. Wings subhyaline, lobed, glabrous, with two indistinct brownish spots, one on r-m, the other at the beginning of the anterior branch of the intercalary fork, the latter distinct but finer than the other veins, R_{4+5} reaching the distal third of the wing, not exceeded by the costa, twice as long as R_p , its base very oblique and shorter than r-m, base of Cu_1 under r-m, M_{3+4} continuing the direction of the stem, Cu_1 very oblique, anal not bifurcated. Legs brownish-black, not enlarged, the two anterior reddish-yellow, segments I-III of all the tarsi whitish, fourth and fifth black; posterior legs a little larger and longer than the anterior four, all the femora are armed with short spines, not only on their ventral part, but on all their periphery, tibiae with similar spines but longer and sparser, tarsi distinctly longer than the tibiae, posterior first tarsi as long as the two following segments together, third segment more than three times as long as wide, anterior first tarsus longer than the two following segments together, fourth segments of all the tarsi transverse, cordiform, prolonged in two lobes below, fifth slender, at least as long as the third, curved and inermous; claws of moderate length, equalling one-third of the segment, equal and simple. Abdomen brownish-black, a little clearer dorsally at the front, feebly haired, one-half longer than the rest of the body, very much narrower than the thorax, subcylindrical; hypopygium large, wider than the abdomen, terminal segments very slender. Length 3.5 mm."

This species has not since been taken in the Sydney district, but there should be little difficulty in recognizing it from the spinose femora and tibiae. It should be noted that Macfie (1940), in his key to the *Stilobezzia* group, presumes in couplet 2 that the claws of the female are similar to those of *Stilobezzia*. Since the female of the genotype, *A. pruinosa*, is not known, this presumption is scarcely justified and the use of this key for the recognition of *Acanthohelea* may prove misleading.

References.

See Part I of this series for any references to literature not cited in full in the text.

EXPLANATION OF PLATE XXII.

Figs. 1-7. Wings of various species of *Stilobezzia* and *Monohalea*. All $\times 23$. 1. *S. pictipes* (female specimen from Northwood). 2. *S. genitalis* (male specimen from Cradle Valley). 3. *S. fitzroyensis* (holotype). 4. *S. tasmaniensis* (paratype female). 5. *M. tasmaniensis* (holotype). 6. *M. brevipes* (holotype). 7. *M. tigrinus* (holotype).